

What is claimed is:

sub
A2/1)

- 1) An absorbent article having a lateral dimension and a longitudinal dimension comprising
 - a topsheet having a longitudinal front and back end;
 - a backsheet having a longitudinal front and back end;
 - an absorbent material disposed between the topsheet and the backsheet;
 - a back waist edge adjacent the longitudinal back end of the topsheet and backsheet;
 - a front waist edge adjacent the longitudinal front end of the topsheet and backsheet;
 - side edges disposed between the back waist edge and the front waist edge;
 - a back waist region defined by the back waist edge and the side edges;
 - a front waist region defined by the front waist edge and the side edges;
 - a crotch region disposed between the back waist region and the front waist region; and
 - a connection mechanism disposed adjacent at least the front waist region or the back waist region,

whereby the waist region that includes the connection mechanism stretches by more than 125% of its original width, when an 800 gram force is applied to an about 4-inch wide laterally cut portion of the waist region.
- 2) The absorbent article as claimed in claim 1, whereby the absorbent article comprises two connection mechanisms.

- 3) The absorbent article as claimed in claim 2, wherein the connection mechanisms further comprise gripping connectors.
- 4) The absorbent article as claimed in claim 3, wherein the gripping connectors are comprised of a plurality of hooks or loops.
- 5) The absorbent article as claimed in claim 3, wherein the gripping connectors are comprised of a tape.
- 6) The absorbent article as claimed in claim 2, wherein at least one of the connection mechanisms stretches by more than about 200% of its original length, when an 800 gram force is applied to an about 4-inch wide laterally cut portion of the waist region.
- 7) The absorbent article as claimed in claim 1, wherein the waist region stretches by more than about 130% of its original width.
- 8) The absorbent article as claimed in claim 1, wherein the waist region stretches by more than about 140% of its original width.
- 9) The absorbent article as claimed in claim 6, wherein the at least one connection mechanism stretches by more than about 210% of its original length.
- 10) The absorbent article as claimed in claim 6, wherein the at least one connection mechanism stretches by more than about 215% of its original length.
- 11) The absorbent article as claimed in claim 1, further comprising a target connector having a lateral width disposed in the front waist region, wherein the article comprises at least two connection

mechanisms extending outwardly in the lateral dimension from the rear waist region.

- 12) The absorbent article as claimed in claim 11, wherein the connection mechanisms are tabs, each tab comprising a gripping connector having a width.
- 13) The absorbent article as claimed in claim 1, wherein the maximum stretchability of the circumference of the waist region for newborn babies is greater than about 185%, whereby the maximum stretchability of the circumference of the waist region is determined by the following equation:

$$MaxStretch = \frac{\sum_{n=1}^n (MaxCirst / MnCirun) \times 100}{n}$$

wherein:

MxCistr is the stretched maximum circumference;

MnCirun is the unstretched minimum circumference; and

n is the number of stages of diapers in which the maximum stretchability is measured.

- 14) The absorbent article as claimed in claim 13, wherein the maximum stretchability of the circumference of the waist region for crawling babies is greater than about 175%.
- 15) The absorbent article as claimed in claim 13, wherein the maximum stretchability of the circumference of the waist region for walking babies is greater than about 175%.
- 16) The absorbent article as claimed in claim 1, wherein the waist region that includes the connection mechanism stretches by more than

130% of its original width, when a 1,000 gram force is applied to an about 4-inch wide laterally cut portion of the waist region.

- 17) The absorbent article as claimed in claim 16, wherein the waist region stretches by more than 135%.
- 18) The absorbent article as claimed in claim 16, wherein the waist region stretches by more than 140%.
- 19) The absorbent article as claimed in claim 1, wherein at least one of the connection mechanisms stretches by more than about 200% of its original length, when a 1,000 gram force is applied to an about 4-inch wide laterally cut portion of the waist region.
- 20) The absorbent article as claimed in claim 19, wherein the at least one connection mechanism stretches by more than about 210% of its original length.
- 21) The absorbent article as claimed in claim 19, wherein the at least one connection mechanism stretches by more than about 215% of its original length.
- 22) The absorbent article as claimed in claim 1, wherein the waist region that includes the connection mechanism stretches by more than 130% of its original width, when a 1,200 gram force is applied to an about 4-inch wide laterally cut portion of the waist region.
- 23) The absorbent article as claimed in claim 22, wherein the waist region stretches by more than 135%.
- 24) The absorbent article as claimed in claim 22, wherein the waist region stretches by more than 140%.
- 25) The absorbent article as claimed in claim 1, wherein at least one of the connection mechanisms stretches by more than about 210% of its original length, when a 1,200 gram force is applied to an about 4-inch wide laterally cut portion of the waist region.

- 26) The absorbent article as claimed in claim 25, wherein the at least one connection mechanism stretches by more than about 215% of its original length.
- 27) The absorbent article as claimed in claim 25, wherein the at least one connection mechanism stretches by more than about 218% of its original length.
- 28) The absorbent article as claimed in claim 16, wherein the maximum stretchability of the circumference of the waist region for newborn babies is greater than about 185%, whereby the maximum stretchability of the circumference of the waist region is determined by the following equation:

$$MaxStretch = \frac{\sum_{n=1}^n (MaxCirst / MnCirun) \times 100}{n}$$

wherein:

MxCistr is the stretched maximum circumference;
MnCirun is the unstretched minimum circumference; and
n is the number of stages of diapers in which the maximum stretchability is measured.

- 29) The absorbent article as claimed in claim 28, wherein the maximum stretchability of the circumference of the waist region for crawling babies is greater than about 175%.
- 30) The absorbent article as claimed in claim 28, wherein the maximum stretchability of the circumference of the waist region for walking babies is greater than about 175%.
- 31) The absorbent article as claimed in claim 22, wherein the maximum stretchability of the circumference of the waist region for newborn

babies is greater than about 185%, whereby the maximum stretchability of the circumference of the waist region is determined by the following equation:

$$MaxStretch = \frac{\sum_{n=1}^n (MaxCirst / MnCirun) \times 100}{n}$$

wherein:

MxCistr is the stretched maximum circumference;

MnCirun is the unstretched minimum circumference; and

n is the number of stages of diapers in which the maximum stretchability is measured.

32) The absorbent article as claimed in claim 31, wherein the maximum stretchability of the circumference of the waist region for crawling babies is greater than about 175%.

33) The absorbent article as claimed in claim 31, wherein the maximum stretchability of the circumference of the waist region for walking babies is greater than about 175%.

34) The absorbent article as claimed in claim 1, wherein the article is for newborn babies and has a Stretchability Index of greater than about 540, wherein the Stretchability Index is measured in accordance with the following equation:

$$SI = MaxStretch_{(800)} + MaxStretch_{(1,000)} + MaxStretch_{(1,200)}$$

wherein:

MaxStretch₍₈₀₀₎ is MaxStretch for the 800 gram force;

MaxStretch_(1,000) is MaxStretch for the 1,000 gram force; and

MaxStretch_(1,200) is MaxStretch for the 1,200 gram force,

whereby each of the MaxStretch values are those for newborn babies.

35) The absorbent article as claimed in claim 34, wherein the SI for crawling babies is greater than about 515, whereby each of the MaxStretch values are those for crawling babies.

36) The absorbent article as claimed in claim 34, wherein the SI for walking babies is greater than about 505, whereby each of the MaxStretch values are those for walking babies.

37) An absorbent article having a lateral dimension and a longitudinal dimension comprising

a topsheet having a longitudinal front and back end;

a backsheet having a longitudinal front and back end;

an absorbent material disposed between the topsheet and the backsheet;

a back waist edge adjacent the longitudinal back end of the topsheet and backsheet;

a front waist edge adjacent the longitudinal front end of the topsheet and backsheet;

side edges disposed between the back waist edge and the front waist edge;

a back waist region defined by the back waist edge and the side edges;

a front waist region defined by the front waist edge and the side edges;

a crotch region disposed between the back waist region and the front waist region; and

at least two connection mechanisms disposed adjacent at least the front waist region or the back waist region,

whereby at least one of the connection mechanisms stretches by more than about 200% of its original length, when an 800 gram force is applied to an about 4-inch wide laterally cut portion of the waist region that contains the connection mechanisms.

- 38) The absorbent article as claimed in claim 37, wherein the connection mechanisms further comprise gripping connectors.
- 39) The absorbent article as claimed in claim 38, wherein the gripping connectors are comprised of a plurality of hooks or loops.
- 40) The absorbent article as claimed in claim 39, wherein the gripping connectors are comprised of a tape.
- 41) The absorbent article as claimed in claim 37, wherein the at least one connection mechanism stretches by more than about 210% of its original length.
- 42) The absorbent article as claimed in claim 37, wherein the at least one connection mechanism stretches by more than about 215% of its original length.
- 43) The absorbent article as claimed in claim 37, wherein the waist region that includes the connection mechanism stretches by more than about 125% of its original width, when an 800 gram force is applied to an about 4-inch wide laterally cut portion of the waist region.
- 44) The absorbent article as claimed in claim 43, wherein the waist region stretches by more than about 130%.

- 45) The absorbent article as claimed in claim 43, wherein the waist region stretches by more than about 140%.
- 46) The absorbent article as claimed in claim 37, further comprising a target connector having a lateral width disposed in the front waist region, wherein the article comprises at least two connection mechanisms extending outwardly in the lateral dimension from the rear waist region.
- 47) The absorbent article as claimed in claim 46, wherein the connection mechanisms are tabs, each tab comprising a gripping connector having a width.
- 48) The absorbent article as claimed in claim 37, wherein the maximum stretchability of the circumference of the waist region for newborn babies is greater than about 185%, whereby the maximum stretchability of the circumference of the waist region is determined by the following equation:

$$MaxStretch = \frac{\sum_{n=1}^n (MaxCirst / MnCirun) \times 100}{n}$$

wherein:

MxCistr is the stretched maximum circumference;
MnCirun is the unstretched minimum circumference; and
n is the number of stages of diapers in which the maximum stretchability is measured.

- 49) The absorbent article as claimed in claim 48, wherein the maximum stretchability of the circumference of the waist region for crawling babies is greater than about 175%.

- 50) The absorbent article as claimed in claim 48, wherein the maximum stretchability of the circumference of the waist region for walking babies is greater than about 175%.
- 51) A method of determining the stretchability of the waist region of an absorbent article having a lateral dimension and a longitudinal dimension, the absorbent article comprising
- a topsheet having a longitudinal front and back end;
 - a backsheet having a longitudinal front and back end;
 - an absorbent material disposed between the topsheet and the backsheet;
 - a back waist edge adjacent the longitudinal back end of the topsheet and backsheet;
 - a front waist edge adjacent the longitudinal front end of the topsheet and backsheet;
 - side edges disposed between the back waist edge and the front waist edge;
 - a back waist region defined by the back waist edge and the side edges;
 - a front waist region defined by the front waist edge and the side edges;
 - a crotch region disposed between the back waist region and the front waist region; and
 - a connection mechanism disposed adjacent at least the front waist region or the back waist region
- whereby the method comprises:
- laterally cutting about a 4-inch longitudinal section of the waist region that includes the connection mechanism;

flattening the longitudinal section of the waist region on a surface without substantially stretching the longitudinal section;

measuring the dimensions of the longitudinal section of the waist region including the dimensions of the connection mechanism;

attaching a first end of the connection mechanism or longitudinal section to a first surface; and

attaching the opposite end of the longitudinal section or a second end of the connection mechanism disposed on the opposite side of the longitudinal section from the first end to a second surface;

applying a predetermined force to the longitudinal section of the waist region including the connection mechanism to thereby stretch the longitudinal section and connection mechanism;

measuring the dimensions of the stretched longitudinal section and connection mechanism;

and calculating the stretchability of the longitudinal section, and the stretchability of the connection mechanism.

- 52) The method as claimed in claim 51, wherein applying the predetermined force comprises using an Instron device to apply the force.
- 53) The method as claimed in claim 51, wherein applying the predetermined force comprises suspending a weight from the second surface.
- 54) The method as claimed in claim 51, wherein the predetermined force is 800 grams.
- 55) The method as claimed in claim 51, wherein the predetermined force is 1,000 grams.

- 56) The method as claimed in claim 51, wherein the predetermined force is 1,200 grams.
- 57) An absorbent article having a lateral dimension and a longitudinal dimension comprising
- a topsheet having a longitudinal front and back end;
 - a backsheet having a longitudinal front and back end;
 - an absorbent material disposed between the topsheet and the backsheet;
 - a back waist edge adjacent the longitudinal back end of the topsheet and backsheet;
 - a front waist edge adjacent the longitudinal front end of the topsheet and backsheet;
 - side edges disposed between the back waist edge and the front waist edge;
 - a back waist region defined by the back waist edge and the side edges;
 - a front waist region defined by the front waist edge and the side edges;
 - a crotch region disposed between the back waist region and the front waist region; and
 - a connection mechanism disposed adjacent at least the front waist region or the back waist region,
- whereby the waist region that includes the connection mechanism has a maximum stretchability of the circumference thereof for newborn babies of more than 185%, when a force selected from the group consisting of an 800 gram, 1,000 gram, and 1,200 gram is applied to an about 4-inch wide laterally cut portion of the waist region, the maximum stretchability being determined by the following equation:

$$MaxStretch = \frac{\sum_{n=1}^n (MaxCirst / MnCirun) \times 100}{n}$$

wherein:

MxCistr is the stretched maximum circumference;

MnCirun is the unstretched minimum circumference; and

n is the number of stages of diapers in which the maximum stretchability is measured.

58) The absorbent article as claimed in claim 57, wherein the maximum stretchability of the circumference of the waist region for crawling babies is greater than about 175%.

59) The absorbent article as claimed in claim 57, wherein the maximum stretchability of the circumference of the waist region for walking babies is greater than about 175%.

60.) An absorbent article having a lateral dimension and a longitudinal dimension comprising

a topsheet having a longitudinal front and back end;

a backsheet having a longitudinal front and back end;

an absorbent material disposed between the topsheet and the backsheet;

a back waist edge adjacent the longitudinal back end of the topsheet and backsheet;

a front waist edge adjacent the longitudinal front end of the topsheet and backsheet;

side edges disposed between the back waist edge and the front waist edge;

a back waist region defined by the back waist edge and the side edges;
a front waist region defined by the front waist edge and the side edges;
a crotch region disposed between the back waist region and the front waist region; and
a connection mechanism disposed adjacent at least the front waist region or the back waist region,
whereby the waist region that includes the connection mechanism has a Stretchability Index of greater than about 540, wherein the Stretchability Index is measured in accordance with the following equation:

$$SI = \text{MaxStretch}_{(800)} + \text{MaxStretch}_{(1,000)} + \text{MaxStretch}_{(1,200)}$$

wherein:

$\text{MaxStretch}_{(800)}$ is MaxStretch for an 800 gram force;

$\text{MaxStretch}_{(1,000)}$ is MaxStretch for a 1,000 gram force; and

$\text{MaxStretch}_{(1,200)}$ is MaxStretch for a 1,200 gram force,

whereby each of the MaxStretch values are those for newborn babies, and whereby MaxStretch is determined in accordance with the following equation:

$$\text{MaxStretch} = \frac{\sum_{n=1}^n (\text{MxCirst} / \text{MnCirun}) \times 100}{n}$$

wherein:

MxCistr is the stretched maximum circumference;

MnCirun is the unstretched minimum circumference; and

n is the number of stages of diapers in which the maximum stretchability is measured.

- 61) The absorbent article as claimed in claim 60, wherein the SI for crawling babies is greater than about 515, whereby each of the MaxStretch values are those for crawling babies.
- 62) The absorbent article as claimed in claim 60, wherein the SI for walking babies is greater than about 505, whereby each of the MaxStretch values are those for walking babies.

Patent 4,923,650